

**ABSTRACT**

A mass analyzer for use in a mass spectrometry system comprises an elongate rod set. The rod set has first and second ends and an inscribed circle within the rod set. The radius of the rod set varies from one  
5 end of the rod set to the other, so that ions of different mass to charge ratios will become unstable at different locations along the rod set. This characteristic can then be used to cause ejection of ions at different locations along the rod set, in a mass dependent manner. Detectors placed linearly along the rod set can then be used to detect ions and determine the mass of  
10 the ions from their ejection locations.